

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
650V	99mΩ@10V	36A

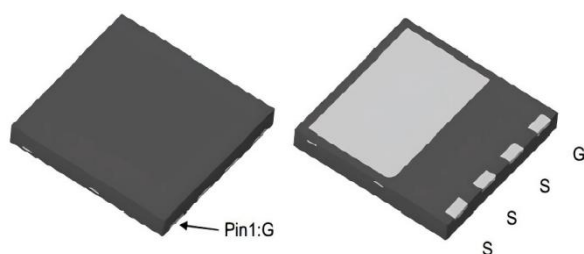
Feature

- New technology for high voltage device
- Ultra low on-resistance and ultra low conduction losses
- Ultra low gate charge cause lower driving requirements
- Diode reverse recovery speed is super fast
- High reliability

Application

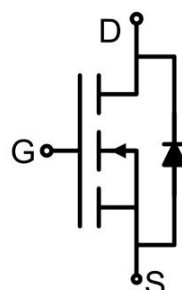
- Power factor correction (PFC)
- Switched mode power supplies (SMPS)
- Uninterruptible power supply (UPS)
- On-board charger (OBC)

Package

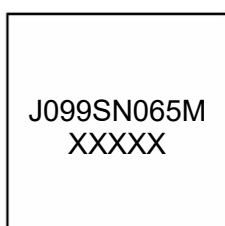


DFN8*8

Circuit diagram



Marking



Absolute maximum ratings (T_C=25°C unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage (V _{GS} =0V)	V _{DS}	650	V
Gate-Source Voltage (V _{DS} =0V) AC (f>1 Hz)	V _{GS}	±30	V
Gate-Source Voltage (V _{DS} =0V) DC	V _{GS}	±20	V
Continuous Drain Current	I _D	36	A
Continuous Drain Current (T _C =100°C)	I _D (100°C)	25.2	A
Pulsed Drain Current ¹⁾	I _{DM}	108	A
Single Pulse Avalanche Energy ²⁾	E _{AS}	324	mJ
Power Dissipation	P _D	346	W
Thermal Resistance Junction to Case	R _{θJC}	0.43	°C/W
Operating Junction Temperature	T _J	-55 ~ +175	°C
Storage Temperature	T _{STG}	-55 ~ +175	°C

Electrical characteristics (T_A=25 °C, unless otherwise noted)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-source breakdown voltage	V _{(BR)DSS}	V _{GS} =0V, I _D =1mA	650			V
Zero gate voltage drain current	I _{DSS}	V _{DS} =650V, V _{GS} =0V, T _C =25℃			10	μA
Gate-body leakage current	I _{GSS}	V _{DS} =0V, V _{GS} =±20V			±100	nA
Gate threshold voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =500μA	3.5	4.2	5	V
Drain-source on-resistance	R _{DS(on)}	V _{GS} =10V, I _D =18A		85	99	mΩ
Dynamic characteristics ³⁾						
Input Capacitance	C _{iss}	V _{DS} =50V, V _{GS} =0V, f =1MHz		2800		pF
Output Capacitance	C _{oss}			96		
Reverse Transfer Capacitance	C _{rss}			6		
Total Gate Charge	Q _g	V _{DS} =480V, V _{GS} =10V, I _D =18A		55		nC
Gate-Source Charge	Q _{gs}			16.5		
Gate-Drain Charge	Q _{gd}			25.5		
Turn-on delay time	t _{d(on)}	V _{DS} =380V, V _{GS} =10V, I _D =18A R _G =1.7Ω		15		nS
Turn-on rise time	t _r			14		
Turn-off delay time	t _{d(off)}			72		
Turn-off fall time	t _f			14		
Source-Drain Diode characteristics						
Source-drain current	I _S	T _C =25℃			36	A
Diode Forward voltage	V _{SD}	V _{GS} =0V, I _S =36A, T _J =25℃			1.2	V
Reverse Recovery Time	T _{rr}	I _F =18A, di/dt =-100A/us T _J =25℃		160		nS
Reverse Recovery Charge	Q _{rr}			0.96		μC
Peak Reverse Recovery Current	I _{rrm}			12		A

Notes:

- 1) Repetitive Rating: Pulse width limited by maximum junction temperature.
- 2) T_J =25°C, V_{DS} =50V, V_G =10V, R_G =25Ω.
- 3) Guaranteed by design, not subject to production.

Typical Characteristics

Figure1. Safe operating area

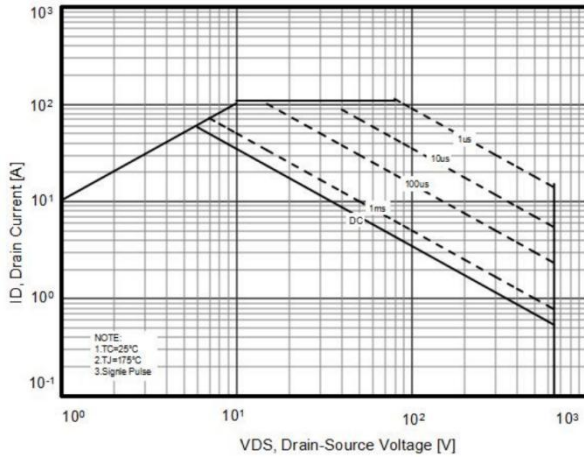


Figure2. Capacitance

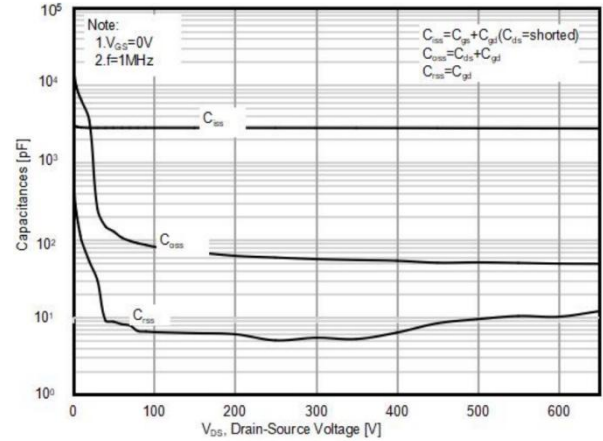


Figure3. Output characteristics

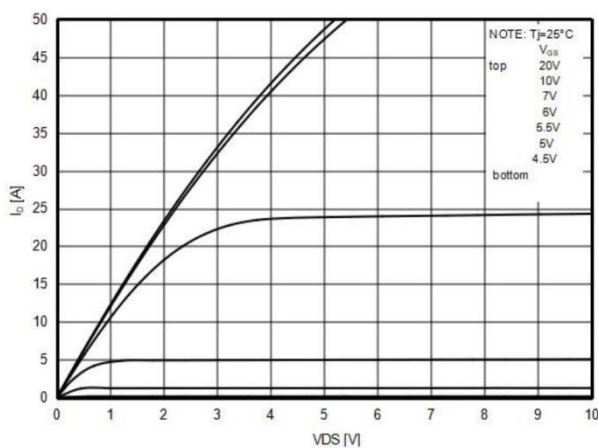


Figure4. Source-Drain Diode Forward Voltage

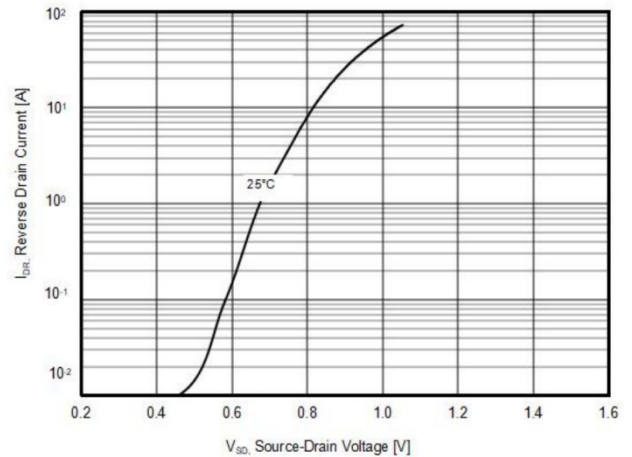


Figure5. Static drain-source on resistance

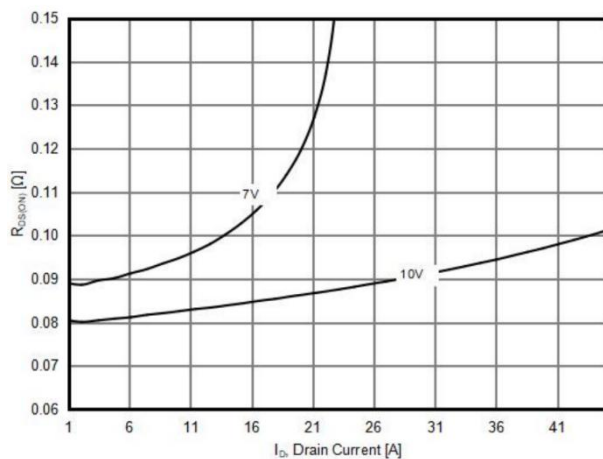
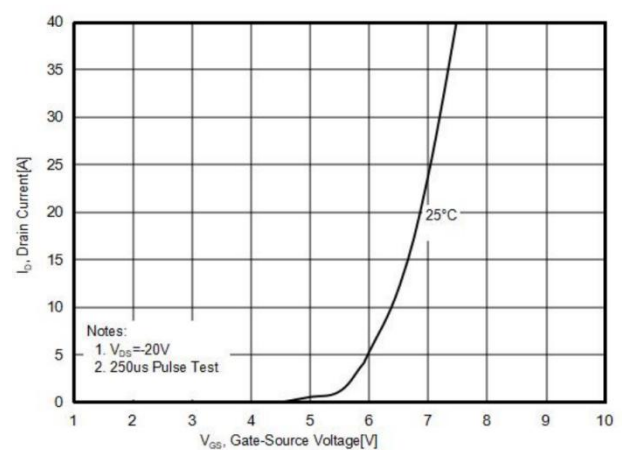


Figure6. Transfer characteristics



Typical Characteristics

Figure7. $R_{DS(ON)}$ vs Junction Temperature

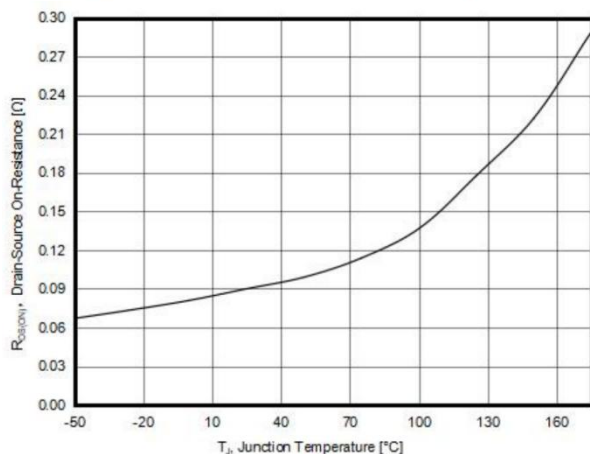


Figure8. BV_{DSS} vs Junction Temperature

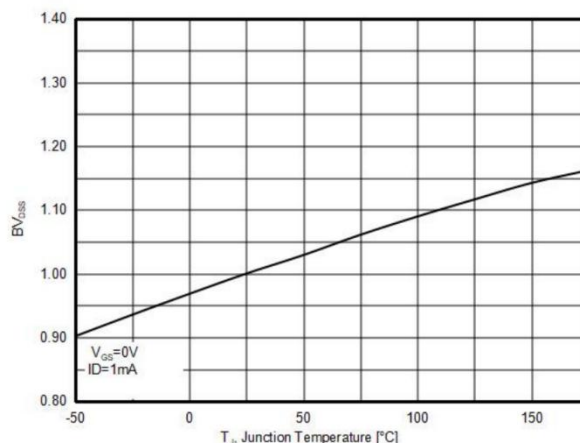


Figure9. Gate charge waveforms

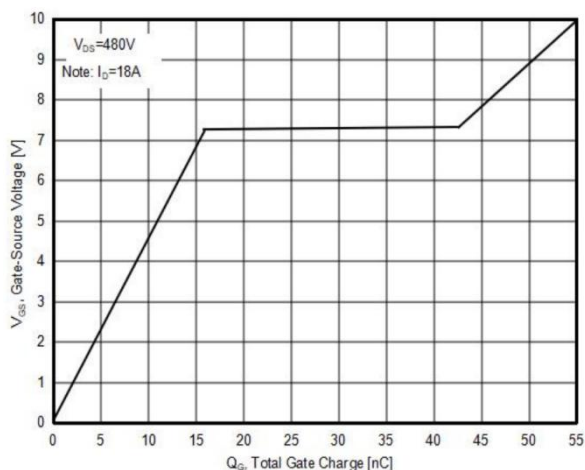
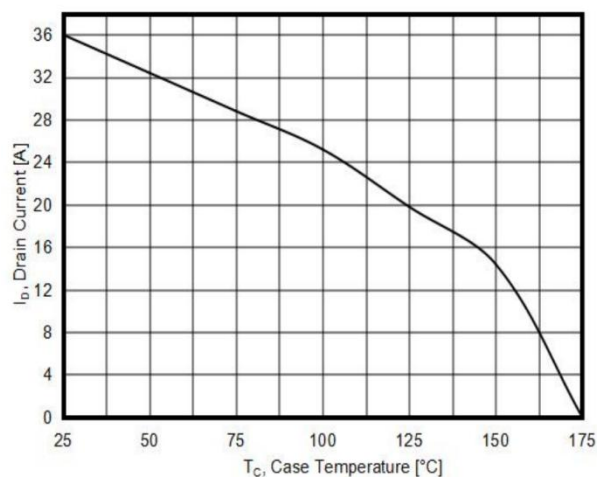
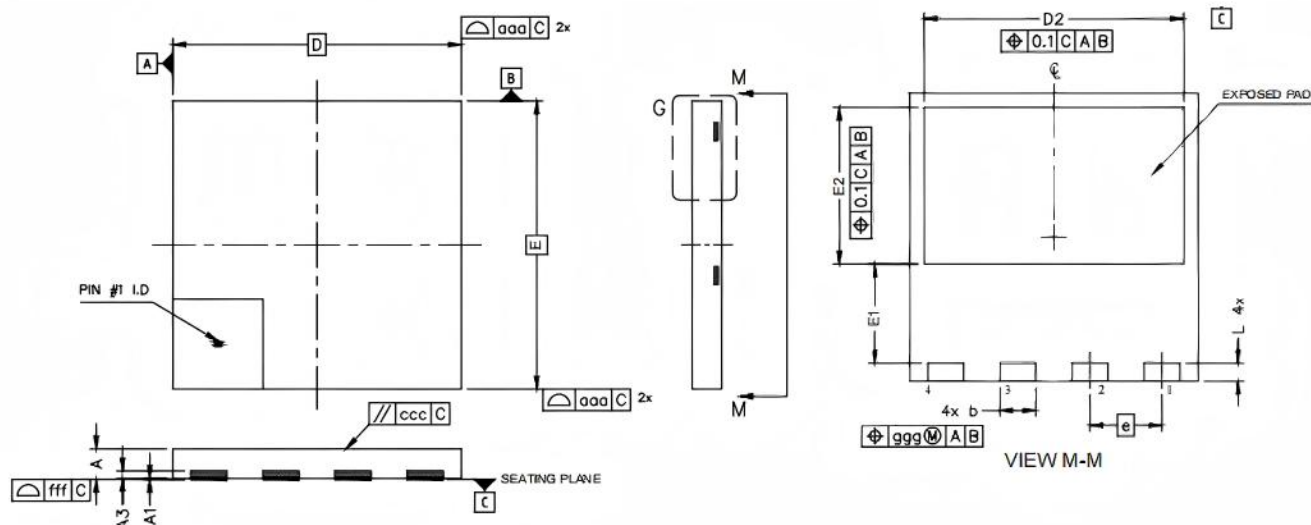


Figure10. Maximum I_D vs Junction Temperature



DFN8*8 Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.750	0.950	0.030	0.037
A1	0.000	0.050	0.000	0.002
b	0.900	1.100	0.035	0.043
A3	0.100	0.300	0.004	0.012
D	7.900	8.100	0.311	0.319
E	7.900	8.100	0.311	0.319
D2	7.100	7.300	0.280	0.287
E1	2.650	2.850	0.104	0.112
E2	4.250	4.450	0.167	0.175
e	2.000 BSC		0.079 BSC	
L	0.400	0.600	0.016	0.024